# TECHNICAL SUPPORT DOCUMENT

## New Mexico's Standards For
## Interstate and Intrastate Surface Waters
## 20.6.4.8 NMAC

**U.S. EPA REGION 6**
**WATER QUALITY PROTECTION DIVISION**

**May 2013**

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## I. Introduction

### Background

As described in §303(c) of the Clean Water Act (CWA) and in the Standards Regulation at 40 CFR 131.20, states and authorized tribes have primary responsibility to develop and adopt water quality standards (WQS) to protect their waters. State and consist of three primary components: designated uses, criteria to support those uses, and an antidegradation policy. In addition, CWA §303(c)(1) and 40 CFR 131.20 require states to hold public hearings at least once every three years to review and, as appropriate, modify and adopt standards. Under 40 CFR 131.21, the Environmental Protection Agency (the EPA or the Agency) reviews new and revised surface WQS that have been adopted by States and authorized Tribes. Authority to approve or disapprove new and/or revised WQS submitted to the EPA for review has been delegated to the Water Quality Protection Division Director in Region 6. Tribal and state WQS are not considered effective under the CWA until approved by the EPA. See 40 CFR 131.21(c).

The purpose of this Technical Support Document (TSD) is to provide the basis for the EPA's approval action on new or revised WQS specific to New Mexico's Standards for Interstate and Intrastate Waters (20.6.4 NMAC).

### Chronology of Events

The New Mexico Environment Department (NMED) filed a petition with the New Mexico Water Quality Control Commission (Commission) proposing amendments to 20.4.6.4 NMAC in August 3 2012. In advance of the hearing, NMED conducted a number of public meetings to disseminate information regarding its proposals and to solicit input from the public. On July 27, 2012 NMED released discussion drafts of the Galisteo Watershed UAA and standards proposal and provided a 30-day comment period. On August 21, 2012, NMED released discussion drafts of the Santa Fe River Use Attainability Analysis (UAA) and standards proposal and provided a 30-day comment period. These UAAs were prepared consistent with federal and state regulations. 40 CFR § 131.10(j) and 20.6.4.15 A(1) NMAC. Legal notice of a public hearing was published in the New Mexico Register on October 16, 2012, and public notice of the hearing was published on October 26, 2012, in two newspapers of general circulation in the state (the Santa Fe New Mexican and the Albuquerque Journal) that also cover the areas affected by the proposals.

The Commission held the public hearing on December 11, 2012. NMED presented direct testimony from three witnesses in support of the petition. Non-technical testimony was also provided by members of the public. Following the public hearing, the Commission held deliberations and ultimately adopted NMED's Revised Proposed Amendments. EPA initiated its review when these revisions became effective as State law on February 14, 2013.

**Summary of the Revised Water Quality Standards Submitted for EPA Review**

The Surface Water Quality Bureau (SWQB), working in cooperation with EPA Region 6, developed a "performance-based approach" as described in EPA's "Alaska Rule." (*See* 65 FR 24647, 24648 (April27, 2000)). A performance-based approach relies on adoption of a process (i.e., a criterion derivation methodology) rather than a specific outcome (i.e., concentration limit for a pollutant) consistent with 40 CFR 131.11 & 131.13. If the process is sufficiently detailed and has suitable safeguards to ensure predictable, repeatable outcomes, EPA can approve of such an approach and did so for the Galisteo Creek use attainability analysis (UAA) on October 9, 2012 and the Santa Fe River UAA on September 13, 2012. The state's performance-based approach is intended to allow the SWQB to set or amend designated uses and implement appropriate controls as the supporting UAA(s) are developed and EPA provides technical review, rather than wait for the state's next triennial revision. The ability to make timely, appropriate use modifications can have significant resource implications for small municipalities discharging to low flow and non-perennial waters.

Utilizing this performance-based approach, the SWQB developed and the Commission adopted several related provisions into its WQS. These consist of amendments to the New Mexico's WQS at 20.6.4.8 NMAC, sections 113, 121, 136, 137, 138 and 139.

## II. New or Revised Water Quality Standards EPA is Approving

EPA has completed its review and is approving the following new and revised water quality standards amending existing stream segments and creating new segments to be contained in New Mexico's *Standards for Interstate and Intrastate Surface Waters* (NMAC 2012) consistent with the requirements of the CWA and EPA's implementing regulations at 40 CFR 131. These amendments include modifications to uses and criteria in the Santa Fe River from Cochiti Pueblo to the city's wastewater treatment facility in 20.6.4.113 NMAC and waters protected as perennial tributaries to the Rio Grande in 20.6.4.121 NMAC. In addition, they include new sections 20.6.4.136, 137, 138 and 139 NMAC, respectively; a new segment from the city's wastewater treatment facility to Guadalupe Street; a new segment for the Santa Fe River from Guadalupe Street to Nichols Reservoir; a new segment for Nichols and McClure Reservoirs; and a new segment for Galisteo Creek from Kewa Pueblo to the confluence with Apache Canyon.

**20.6.4.113 NMAC - Rio Grande Basin**

**The Santa Fe River and perennial reaches of its tributaries from the Cochiti pueblo boundary upstream to the outfall of the Santa Fe wastewater treatment facility.**

Segment 20.6.4.8.113 NMAC (segment 113) for the Santa Fe River from Cochiti Pueblo to the City of Santa Fe wastewater treatment facility has been modified to reflect existing uses. These changes replace the marginal coldwater and warmwater aquatic life uses with the more protective coolwater aquatic life use, and also changes the contact recreation use from secondary to primary.

In its UAA, the SWQB refers to Griffith et al. (2006) ecoregion analysis for New Mexico to show the variation in expected and actual temperature levels in the ecoregion (22h) that segment 113 is located in.

Ecoregion maps indicate that the July average air temperature should be 22°C. However, the SWQB Air-Water Correlation analysis predicted that the naturally occurring water temperature for the reach from Nichols Reservoir to the Santa Fe wastewater treatment facility outfall is in the coolwater range, with a maximum temperature of less than 29°C, although it may approach the current segment-specific temperature criterion of 30°C. At these temperatures, the data indicate that the coolwater and possibly the marginal coldwater aquatic life uses are attainable. Since no coldwater fish have ever been collected at locations downstream of the wastewater treatment facility in the Santa Fe River or at the Rio Grande/Santa Fe River confluence, it is unlikely that the marginal coldwater use can be attained but the coolwater use is attainable and appropriate.

In this segment, the aquatic life use has been changed from marginal coldwater and warmwater to coolwater, but the current 30°C segment specific temperature criterion was retained. Although the 30°C criterion is higher than the 29°C maximum temperature criterion that is normally associated with the coolwater aquatic life use, the supporting documentation indicated that this criterion is sufficient to protect the coolwater use in this instance. Adopting the coolwater use also means the instantaneous dissolved oxygen (DO) criterion will increase from 4 to 5 mg/L. Data indicate that the DO concentration falls below the 5 mg/L criterion, however, the low concentrations appear to be in a response to high levels of nutrients and not driven by temperature. Based on the naturally-occurring water temperature and the fish collection records, the coolwater aquatic life use appears to be the appropriate aquatic life use for this segment.

Primary contact has been observed in this segment and can be expected to continue through the surrounding Santa Fe urban environment. Flow data show that as recently as 2010, seasonal snowmelt and reservoir releases have resulted in consistent flow extending to the downstream segment boundary, indicating that the primary contact use can be supported. The data supports changing both the use and primary contact criteria for E. coli to a monthly geometric mean value of 126 cfu/100 ml and single sample value of 410 cfu/100 ml.

### 20.6.4.121 NMAC - Rio Grande Basin

**Perennial tributaries to the Rio Grande in Bandelier national monument and their headwaters in Sandoval county and all perennial reaches of tributaries to the Rio Grande in Santa Fe county unless included in other segments and excluding waters on tribal lands.**

The WQCC has removed a number of waters from segment 20.6.4.121 NMAC (segment 121), creating four separate regulatory segments, 20.6.4.136, 137, 138 and 139 NMAC. The waters, now excluded from segment 121, include the Nichols, McClure and Cerrillos reservoirs, portions of the Santa Fe River, and Galisteo Creek and tributaries. New segments containing these waters are discussed in the following sections.

There are no uses or associated criteria modifications for segment 121 per se. However, with the exception of the deletion of the Cerrillos Reservoir and its inclusion in segment 139, other such modifications to this existing segment are not readily apparent given the structure of the state's regulatory segment descriptions. EPA considers the practice of referring to "perennial reaches" or "perennial reaches of its tributaries" rather identifying waters covered by regulatory segment to be unclear. EPA therefore encourages the state to consider future amendments to more clearly specify waters covered by each regulatory segment.

**20.6.4.136 NMAC - Rio Grande Basin**

**The Santa Fe River from the outfall of the Santa Fe wastewater treatment facility to Guadalupe Street.**

This is a new classified segment for the Santa Fe River, extending from the City of Santa Fe wastewater treatment facility, upstream to Guadalupe Street. This reach of the Santa Fe River was previously an unclassified intermittent water covered by Section 20.6.4.98 NMAC. The supporting UAA included data from both Air-Temperature Correlation analyses and Hydrologic Protocol (HP) field studies.

Reported air temperature ranges for Level IV Ecoregions 21d and 22h relevant to this segment average from 19 to 22°C during July. However, the average air temperatures available from PRISM (Parameter-elevation Regressions on Independent Slopes Model) for this period are over 27°C. The Air-Water Correlation predicted maximum water temperature from the July average air temperature was 29°C. The naturally occurring water temperature range for the reach from Nichols Reservoir to the Santa Fe wastewater treatment facility outfall is in the coolwater to marginal coldwater range (maximum 24 to 29°C), suggesting that the coolwater or possibly the marginal coldwater aquatic life is attainable. However, uses more protective than warmwater are generally not attainable if July average air temperature is greater than 23°C, which indicates that the limited aquatic life use is appropriate.

Santa Fe River flow modeling indicates that reservoir bypass flows in combination with seasonal and storm flows do not provide sufficient water to support the marginal warmwater aquatic life use that was applicable under Section 20.6.4.98 NMAC. The majority of Santa Fe River water is impounded by McClure and Nichols Reservoirs and either processed at the municipal water treatment plant for public water supply or diverted for irrigation. Diversions for city water supply and irrigation by the Llano, Cerro Gordo, Muralla and Madre acequias result in ephemeral, intermittent or low flow conditions or water levels through this segment.

HP data show that the area around Guadalupe Street separates the upstream perennial/intermittent portion from the downstream ephemeral portion of the Santa Fe River. Flows are dependent on base flow irrigation withdrawals, bypass flows, snowmelt, and storm flows. HP scores were very low in spite of planting native vegetation and installation of structures to improve stream characteristics in the reach from Saint Frances Drive to Frenchy's field because of the lack of upland plants, exposed rock and sandy substrate just downstream of these modifications. Highly erosive flows and/or depth of scour in response to heavy rainfall events may limit the presence of rooted vegetation as well. There have been no documented fish

collections on this part of the river. Since the portion of the river from Guadalupe Street downstream to the wastewater treatment facility is ephemeral, a limited aquatic life use is the appropriate use for this segment.

The SWQB also found that when water is present, this reach of the river has historically been used for primary contact. As in many urban streams, this use is expected to continue, supporting primary contact as both an attainable and existing use. The use-specific numeric criteria described in 20.6.4.900 NMAC of a monthly geometric mean of 126 cfu/100 ml and single sample value of 410 cfu/100 mL for E. coli are now the applicable criteria for this new segment. In addition, the livestock watering and irrigation uses and associated criteria will also apply.

Based on the supporting data outlined above, the main factor that affects beneficial use attainment in this reach of the Santa Fe River is the lack of perennial flow. Flow is significantly affected by hydromodification and prevented the attainment of the marginal warmwater aquatic life use. The hydromodifications from acequia and other structures with established legal water rights prevent management of this segment in a way that would support a marginal warm water fishery use. Considering the flow regime and temperature limitations, the highest aquatic life use that can be attained from Guadalupe Street to the wastewater treatment facility discharge is limited aquatic life. These findings are consistent with 40 CFR 131.10(g)(1), (2) and/or (4).

**20.6.4.137 NMAC - Rio Grande Basin**

**The Santa Fe River from Guadalupe Street to Nichols Reservoir**

This is a new classified segment for the Santa Fe River. This reach of the Santa Fe River was previously an unclassified intermittent water covered by Section 20.6.4.98 NMAC. These amendments will establish the more protective coolwater aquatic life use, retain the primary contact use with more protective criteria, and maintain the wildlife habitat, livestock watering and irrigation uses.

The Santa Fe River watershed supplies approximately half of the City of Santa Fe's water demand with the remainder drawn from water wells. Water impounded in the upper end of the watershed in McClure and Nichols Reservoirs is distributed for municipal use with some water diverted for irrigation. The HP results indicate that the Guadalupe Street area generally separates this upstream perennial/intermittent portion of the Santa Fe River from the downstream ephemeral portion depending on base flow, bypass flows, snowmelt, and storm flows.

To address variable flow in the river, the Santa Fe City Council adopted a binding ordinance, committing to use up to 1,000 acre-feet per year of its water supply (bypass flow) from the Santa Fe River, depending upon hydrologic conditions in the watershed. The planned releases from Nichols reservoir are intended to approximate normal seasonal (perennial) stream flows depending on runoff available in the watershed. At the time of the HP survey in this segment, a 3 cubic feet/second ($ft^3$/sec) flow produced scores that were in the perennial range and in the intermittent range if points for the additional flow were not included in the score. Although there may not always be continuous downstream flow, the upstream portion of the river has disconnected pools at base flows that should allow this new segment to attain the coolwater

aquatic life use. The segment also gains the irrigation use since some water is diverted for that purpose.

Air-Temperature Correlation analysis indicates that the water temperatures for the reach from Guadalupe Street to below Nichols Reservoir are in the coolwater aquatic life use range (maximum 29°C), therefore this use appears attainable. There are no records of fish collection for this portion of the river and no evidence to indicate that this segment of the stream ever supported coldwater fish.

The new segment has also been assigned the primary contact use. The use-specific numeric criteria in section 20.6.4.900 NMAC of the standards are applicable to the designated uses, including the primary contact including the monthly geometric mean of 126 cfu/100 ml and single sample value of 410 cfu/100 mL for E. coli. This represents a change in the primary contact criteria from the less stringent criteria applicable to waters in 20.6.2.98 NMAC. This segment will also retain the wildlife habitat and livestock watering uses previously applied under 20.6.4.98 NMAC.

**20.6.4.138 NMAC - Rio Grande Basin**

**Nichols and McClure Reservoirs**

This is a new classified segment for the Santa Fe River that includes Nichols and McClure Reservoirs. These waters were previously included in segment 20.6.4.121 NMAC (segment 121). These waters will retain the uses that applied under segment 121.

Some background is useful here. The New Mexico standards apply to all waters of the state, including lakes. In the previously approved state standards, only a limited number of lakes were identified as classified waters in sections 20.6.4.101-899 NMAC. Within this structure, some lakes were specifically named within a particular regulatory stream segment description while others were included in broad geographic groups but not specifically named. More recently, some lakes and reservoirs may have been categorized as unclassified perennial waters under Section 20.6.4.99 NMAC by default in the state's standards. Although this was intended to ensure that CWA §101(a)(2) uses are being applied to unclassified perennial waters, the default uses and criteria are intended for lotic waters and not appropriate for lakes or reservoirs. This approach to lakes is not unusual given the tendency for most state regulatory programs to focus on lotic waters.

As in previous amendments, the state considered new and existing data on the hydrologic, physical and biological characteristics to determine the appropriate designated use for these lakes and reservoirs. In this instance, the Commission adopted aquatic life uses and supporting criteria that are as protective as those that previously applied to these waters. EPA considers the state's focus on classifying lakes into distinct regulatory segments and applying appropriate criteria as consistent with both 40 CFR 131.10(a) and (b).

The high quality coldwater aquatic life designated use and associated segment-specific conductance criterion of 300 μS/cm or less. 20.6.4.900(H)(1) was retained for Nichols and

McClure Reservoirs. The primary contact and public water supply uses were also retained. The use-specific numeric criteria in section 20.6.4.900 NMAC of the standards are applicable to the designated uses, except for the segment-specific E. coli criteria monthly geometric mean of 126 cfu/100 ml and single sample of 235 cfu/100 ml will continue to apply.

Lands within the Santa Fe National Forest in the Santa Fe River watershed above Nichols Reservoir have been closed to public access by federal (USDA) and state closures since the 1930's . This rule applies broadly and limits access, leaving both the domestic water supply and livestock watering uses unattainable. The public water supply, irrigation and wildlife habitat that applied under the previous classification will continue to apply to these reservoirs.

**20.6.4.139 NMAC - Rio Grande Basin**

**Perennial reaches of Galisteo creek and perennial reaches of its tributaries from Kewa pueblo upstream to 2.2 miles upstream of Lamy.**

This is a new classified segment for Galisteo Creek. The waters included in this segment were previously classified in Section 20.6.4.121 NMAC (segment 121). Under segment 121, these waters were originally designated for high quality coldwater aquatic life, primary contact, wildlife habitat, irrigation and livestock watering uses.

The supporting UAA describes the Galisteo Creek watershed as highly variable in elevation, resulting in significant differences in flow and temperature. It also discusses Griffith et al. (2006) analysis of ecoregions that make up the Galisteo watershed and associated detailed water quality, hydrologic and aquatic life data. Covering some 730 sq. mi., Galisteo Creek watershed can be divided in the upper, middle and lower sections. The upper Galisteo Creek watershed is located in the southern end of the Sangre de Cristo Mountains at over 10,000 feet and lies in the forested, mountainous ecoregion 21 (Griffith, et al., 2006), and contains a number of high gradient headwater streams including Apache Canyon and Deer Creeks with the lowest air temperatures in the Rio Grande basin. These high gradient headwater streams join Galisteo Creek at an elevation of 6,800 feet. From this point, streams are lower gradient as they enter the middle and lower portions of the watershed. The majority of the Galisteo watershed is in the southernmost part of the Rio Grande basin, mostly in the warmer and drier ecoregions 22 and 26 (Griffith, et al, 2006). From this point, streams are lower gradient as they enter the lower watershed. In the lower watershed Galisteo Creek enters the Rio Grande at an elevation of 5,180 feet. Following the shift to low gradients stream, flows in the mainstem and tributaries vary throughout the watershed and may be perennial, intermittent or ephemeral.

The supporting UAA explains that Galisteo Creek was originally added to state's 303(d) list in 1998 for stream bottom deposits, reduction of riparian vegetation and stream bank destabilization. It notes intensive surveys in 2001 that resulted in the state modifying the list to remove the previous impairments and include exceedances of temperature and specific conductance criteria assigned to the high quality coldwater aquatic life use in 2004. The natural ecoregional variation and significant shift in elevation and stream gradients contributed to this listing and suggest that the high quality coldwater aquatic life use is likely not appropriate or attainable for most of the Galisteo watershed. The state determined that the reasonable next step

was the review of the applicable water quality standards before committing to the development of a Total Maximum Daily Load, resulting in the development of the UAA supporting the current amendments. The SWQB utilized both existing and new survey data in developing the supporting UAA.

The Air-Water Correlation analysis predicted and measured water temperatures indicated that the high quality coldwater aquatic life use is attainable above this location including in perennial reaches of Apache Canyon and Deer Creek. However, in the middle and lower watershed, data showed that naturally occurring higher ambient temperatures likely prevent the attainment of this use in the perennial reaches of Galisteo Creek and perennial reaches of its tributaries below the confluence with Apache Creek in and below Cañoncito.

The hydrology data indicated that Galisteo Creek at Cerrillos, and one mile above County Road 55A, are perennial reaches sustained by groundwater. Galisteo Creek in the village of Galisteo is also a perennial reach sustained by groundwater. Predicted temperatures here meet the coolwater and marginal coldwater criteria with or without groundwater influence. San Cristobal Creek is a major tributary of Galisteo Creek in the middle watershed. Predicted temperatures meet the marginal coldwater and coolwater criteria with or without groundwater influence. The characteristics of the xeric ecoregions where these streams occur combined with the cooling influence of groundwater suggest that the coolwater aquatic life use can be supported and possibly the marginal coldwater life use.

Waters in the Galisteo watershed have been historically described as a fishery resource according to Kewa Pueblo tradition and recent biological surveys conducted in Apache Canyon and Deer Creeks identified native trout, suggesting trout stocked in the Cañoncito area may survive and reproduce. However, the results of electrofishing conducted during 2001 at each of three perennial reaches in the middle and lower watershed produced only native flathead chub which prefer intermediate - not cold - water temperatures. Searches of other historical records and databases did not result in additional fishery data. Available information indicates that the coolwater aquatic life use would be appropriate here.

The supporting UAA shows that the high quality coldwater aquatic life use remains attainable in the forested, mountainous headwaters in ecoregion 21 that contains Apache Canyon and Deer Creek and should remain classified in segment 121. The UAA also shows that for most of the Galisteo watershed, the natural temperature and flow do not support the high quality coldwater use and that the coolwater aquatic life use is appropriate and protective for perennial reaches of Galisteo Creek and perennial reaches of its tributaries downstream of Cañoncito. These amendments also exclude all non-perennial reaches within the watershed and all waters on the Kewa Pueblo.

All waters that are contained in this segment are not readily apparent given the structure of the state's regulatory segment descriptions. The practice of referring to "perennial reaches" or "perennial reaches of its tributaries" rather identifying waters covered by regulatory segment is unclear. Again, EPA therefore encourages the state to consider future amendments to more clearly specify waters covered by each regulatory segment.

## III. REFERENCES

Federal Clean Water Act. 33 U.S.C. 1251 et seq.

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